Programme Specification (Postgraduate) FOR ENTRY YEAR: 2025/26

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1. Programme Title(s):

MSc in Medical Statistics
MSc in Medical Statistics with specialisation in Genetic Epidemiology (available as a transfer)
MSc in Medical Statistics with specialisation in Health Technology Assessment (available as a transfer)
Postgraduate Certificate in Medical Statistics (available only as an exit award)
Postgraduate Diploma in Medical Statistics (available only as an exit award)

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time/ Part-time

b) Type of study

Campus-based

4. Registration periods:

The normal period of registration is 12 months full-time/27 months part-time

The maximum period of registration is 24 months full-time/48 months part-time

5. Typical entry requirements:

Candidates should have at least a good second-class honours degree or equivalent in mathematics or statistics, or in a subject with a substantial mathematical or statistical content. Where English is not a candidate's first language, applicants will be required to provide evidence of appropriate language skills in line with the requirements of Senate Regulation 1.

6. Accreditation of Prior Learning:

Accredited prior learning will not be accepted for exemptions from modules on this programme.

7. Programme aims:

The programme aims:

- To cover up to an advanced level statistical theory, methods and modelling needed by practising medical statisticians
- To equip students to teach themselves new skills in what is a fast developing subject
- To enable students to turn a problem described in medical or biological terms into something that can be tackled by a statistical analysis
- To develop the student's computer skills so that they can handle and analyse large medical databases
- To develop communication skills so that the students are able to describe complex statistical ideas to non-statisticians and to present the results of their analyses in written and oral forms
- To develop the student's critical appraisal skills so that they appreciate the strengths and weakness of a research study and can make practical suggestions for improvement.

- To encourage team-working of the type that the students will meet when they work as medical statisticians

8. Reference points used to inform the programme specification:

External Examiners' reports
Framework for Higher Education Qualifications
University Education Strategy
Periodic Developmental Review
Student feedback; both module and programme
First destination careers data
QAA Characteristics Statement: Master's Degree
Senate Regulations

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Subject and Professional skills		
Knowledge		
Demonstrate comprehensive knowledge required at the forefront of the medical/bio statistics discipline: the core statistical theory including Frequentist, Likelihood and Bayesian approaches; the most commonly used designs of studies to collect medical/health data; the methods of analysis of such data.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examination, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).
Concepts		
Demonstrate an in-depth understanding of the role of statistical analysis and modelling in medical/health research and critically evaluate their use.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examination, formative activities such as group work, oral presentations and computer lab reviews, classroom discussions. Dissertation (MSc only).
Techniques		
Effectively use statistical software to manage complex data, conduct and interpret current advanced statistical analyses, and fit, evaluate and assess the assumptions of a range of statistical models.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Critical analysis		
Interpret and critically appraise the use and findings of statistical analyses in practice, discuss the strengths and limitations and make recommendations for further work.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examination, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).
Presentation		
Confidently and professionally communicate the findings of complex statistical analyses to other statisticians and to non-statisticians through written reports and oral presentations. Participate in discussion of the use and interpretation of statistical analyses.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Study skills sessions on report writing and oral presentations. Project supervision (MSc only).	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).
Appraisal of evidence		
Demonstrate a high level of competency in critically evaluating the quality of data and statistical analyses related to medicine/health, both their own and current analyses published in the medical literature.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examination, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).
(b) Transferable skills		
Research skills		
Perform a review of relevant literature, demonstrate knowledge of the design of research studies and conduct an appropriate statistical analysis.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Study skills sessions on library skills. Project supervision (MSc only).	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only)
Communication skills		
Write a scientific report of a statistical analysis. Deliver a professional oral presentation. Participate in a discussion on statistical analyses.	Study skills sessions on report writing, presentations, consultancy skills and group work. Project supervision (MSc only)	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).
Data presentation		
Effectively use statistical and Office software to present a clear summary of a data set and the findings of a statistical analysis.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Study skills session on report writing. Project supervision (MSc only)	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only).

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Information technology		
Conduct a literature search of publication databases and use bibliographic software. Effectively use software to produce professional quality reports and presentations. Use a range of statistical software packages for data handling and advanced statistical analysis.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Study skills sessions on statistical software and library searching and bibliographic software. Project supervision (MSc only).	Coursework, mini-projects, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only)
Problem solving		
Identify, conduct and interpret the most appropriate methods of data collection and statistical analysis to answer complex medical/health questions. Show originality in the approach to problem solving.	Lectures, problem solving classes, directed and self-directed reading, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examination, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only)
Working relationships		
Work effectively in a team and communicate findings to statisticians and non-statisticians. Demonstrate the ability to plan and work effectively on an independent project under supervision (MSc only).	Problem solving classes, directed and self-directed reading, individual and group-work. Study skills sessions on group work, report writing and consultancy skills. Project supervision (MSc only).	Coursework, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only)
Managing learning		
Demonstrate time-management skills through organisation of the workload and deadlines.	Problem solving classes, individual and group-work. Project supervision (MSc only).	Coursework, mini-projects, examinations, formative activities such as group work, oral presentations and computer lab reviews. Dissertation (MSc only)
Career management		
Identify the opportunities (jobs and PhDs) available to MSc graduates and effectively demonstrate knowledge of the skills required to be a practising medical statistician through job applications and interviews. Professionally present own project research to peers and supervisors.	Lectures, problem solving classes, directed and self-directed reading. Subject specific careers sessions organised within the course and externally. Study skills sessions on applying for jobs, writing a CV and covering letter and consultancy skills, Blackboard folder on skills including interview skills. Personal tutor meetings. Guest lectures and seminars from potential employers. Project supervision (MSc only).	Personal tutor meetings and PDP, Gaining employment or PhD through an effective CV, covering letter and interview. Project presentation (MSc only).

10. Special features:

Accredited by the Royal Statistical Society.

10a. Research-inspired Education

Students on this programme will advance through the four quadrants of the University of Leicester Research-inspired Education Framework as follows:

RiE Quadrant	Narrative
	The programmes provides a thorough grounding in the statistical methods underlying the analysis of medical and health data, and also critical thinking and problem-solving skills through exposure to real-world/authentic medical and health data problems. It draws on international medical research ensuring that the knowledge and skills our graduates acquire through the programme will have applications across the world.
Research-briefed Bringing staff research content into the curriculum.	Research-briefed - The students will be exposed to challenging learning, inspired and informed by cutting-edge research, by drawing on the internationally renowned research of the Biostatistics and Genetic Epidemiology research groups in Population Health Sciences as well as other experts at the University of Leicester. All staff teaching on the programme are engaged in research and bring their experiences into their teaching.
Research-based Framed enquiry for exploring existing knowledge.	Research-based - Lectures, classroom practicals and assessments are based on real world medical research problems and data, putting the data, statistical methods and modelling into context.
Research-oriented Students critique published research content and process.	Research-oriented – Students are required to critically appraise their own data, analyses and findings in both seminars and assessment. They are given guidance and training in how to critically appraise published research.
Research-apprenticed Experiencing the research process and methods; building new knowledge.	Research-apprenticed – Training and practice will be provided on report writing, group work, presentation skills, reading research papers, library skills including searching and reference manager software. Students will work individually and in groups to present their findings from their data management, analyses and critical appraisals, via individual written reports, oral group presentations and a group poster. During their individual 12-week research projects, students will work, under supervision of academic member of staff, on a project that reflects a real statistics issue in medical research. They will present their initial aims and planned work to their peer group and project supervisors and then present their findings in a formal report.

As part of studying at a research-intensive university, students on this programme have the following extra or co-curricular opportunities available to them to gain exposure to research culture:

Students will have access to Departmental seminars covering a range of topics across disciplines in health research, delivered by internal researchers and academic staff and also external speakers. They will have access to PhD students and researchers who will support them in career decisions.

Career sessions are delivered by PhD students and graduates who describe their career pathways in working as a statistician in health research.

Being on an accredited course, students have access to Royal Statistical Society seminars and early career conferences.

Teaching on this programme will be research-informed (it draws consciously on systematic inquiry into the teaching and learning process itself) in the following way:

Teaching team meetings enable staff to share good practice, discuss teaching approaches and disseminate innovative practice. Most staff teach across a range of UG and PGT programmes and hence have a wide breadth of experience but are continually looking for new and innovative ways to inform the teaching and assessment.

The School supports all staff involved in teaching to gain an accredited Higher Education teaching qualification, in which they demonstrate their use of teaching theory to support their own practice and reflect on their current teaching and continuing professional development.

11. Indications of programme quality:

The course has been running successfully for over 30 years and is accredited by the Royal Statistical Society. The number of applicants is high and the course attracts applicants from Europe and overseas. The course has a high reputation in the pharmaceutical industry with many companies employing directly from the course. Both the main pharmaceutical industries and contract research organisations support the course through contributing to teaching on the course, providing representatives for the Board of Studies, organising careers events and by funding studentships on the course. The course has been awarded research council studentships from the NIHR and the MRC. There is a high demand for graduates from the MSc and most students who pass the course quickly find jobs working as medical statisticians or funded PhDs. Student feedback via module and course evaluation forms is very positive and many graduates return to give careers and recruitment sessions.

External examiners reports have always been highly supportive of the course and comment on the high standards achieved by the graduates, particularly in the dissertation. Many graduates have continued, after graduating, working with their supervisors on their project work and have been successful in having their work published.

12. Scheme of Assessment

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations)

13. Progression points

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations)

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course and a recommendation will be made to the Board of Examiners for an intermediate award where appropriate.

14. Rules relating to re-sits or re-submissions:

As defined in Senate Regulation 6: Regulations governing Taught Postgraduate Programmes of Study (see Senate Regulations)

15. Additional information

N/A

16. External Examiners

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports can be found here.

Appendix 1: Programme structure (programme regulations)

Core Taught Modules (September to April)

		Credits
Full-time		
MD7440	Fundamentals of Medical Statistics	15
MD7453	Statistical Computing and Inference	15
MD7442	Statistical Modelling	15
MD7451	Clinical Trials	15
MD7443	Computationally Intensive Methods	15
MD7452	Epidemiology	15
MD7444	Advanced Statistical Modelling	15
Part-time		
Year 1		
MD7440	Fundamentals of Medical Statistics	15
MD7467	Statistical Modelling	15
MD7451	Clinical Trials	15
Year 2		
MD7453	Statistical Computing and Inference (spanning year 1 and year 2)	15
MD7443	Computationally Intensive Methods	15
MD7452	Epidemiology	15
MD7468	Advanced Statistical Modelling	15
Option module (April/May) (spanning year 1 and year 2)		15

Each student must select one of the following three streams:

- Medical Statistics
  by choosing option MD7447 Further Topics in Medical Statistics
- Medical Statistics specialising in Genetic Epidemiology
  by choosing option MD7448 Genetic Epidemiology
- Medical Statistics specialising in Health Technology Assessment
  by choosing option MD7449 Health Technology Assessment

Core research module (June to September full-time, June to December part-time) **(MSc only)**

MD7446 Project 60

Students must undertake a research project. This provides students with the opportunity to examine in depth a topic of particular relevance to their interests and work. The project must demonstrate more than just a competent standard statistical analysis. Students are encouraged demonstrate advanced critical skills and investigate novel approaches to their analysis. Their choice of project should reflect their choice of stream so that students specialising should select a project in their specialist area.

Total credits 180

Appendix 2: Module Specifications

See module specification database [login required]